ABSTRACT OF THE DISCLOSURE

Method for gas liquefaction comprising cooling a feed gas by a first refrigeration system in a first heat exchange zone and withdrawing a substantially liquefied stream therefrom, further cooling the substantially liquefied stream by indirect heat exchange with one or more work-expanded refrigerant streams in a second heat exchange zone, and withdrawing therefrom a further cooled, substantially liquefied stream. At least one of the one or more work-expanded refrigerant streams is provided by compressing one or more refrigerant gases to provide a compressed refrigerant stream, cooling all or a portion of the compressed refrigerant stream in a third heat exchange zone to provide a cooled, compressed refrigerant stream, and work expanding the cooled, compressed refrigerant stream to provide one of the one or more work-expanded refrigerant streams. The flow rate of a work-expanded refrigerant stream in the second heat exchange zone typically is less than the total flow rate of one or more work-expanded refrigerant streams in the third heat exchange zone.